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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/008,507	11/08/2001	Brandon C. Collings	10.0935	5377
21919	7590	06/15/2006	EXAMINER	
MEREK, BLACKMON & VOORHEES, LLC			SINGH, DALZID E	
673 S. WASHINGTON ST.			ART UNIT	
ALEXANDRIA, VA 22314			PAPER NUMBER	
			2613	

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/008,507	COLLINGS ET AL.	
	Examiner	Art Unit	
	Dalzid Singh	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 29 is/are allowed.
- 6) ☒ Claim(s) 1-10, 14, 23, 25-28 and 30-35 is/are rejected.
- 7) ☒ Claim(s) 11-13, 15-22 and 24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "connection elements..." as recited in claims 26, 27, 28 and 33 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 26-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 26 recites, "connection elements that optically connect the add-out port of said first module to the add-in port of said second module, and the drop out port of said second module is optically connected to the drop-in of said first module." There is no structure or circuit diagram provided to teach a person of ordinary skill in the art where or how the connection element provides such connection between the ports. Therefore, the specification fails to provide enabling disclosure for claim 26.

Claim 27 recites, "connection elements that optically connect the add-out port of said third module to the add-in port of said fourth module, and the drop out port of said fourth module is optically connected to the drop-in of said third module; and connection elements that optically connect the drop-out port of said third module to the add-in port of said fourth module, and the drop-out port of said fourth module is optically connected to the add-in of said third module." There is no structure or circuit diagram provided to teach a person of ordinary skill in the art where or how the connection element provides

such connection between the ports. Therefore, the specification fails to provide enabling disclosure for claim 27.

Claim 28 recites, "connection elements that optically connect the add-out port of said third module to the add-in port of said fourth module, and the drop out port of said fourth module is optically connected to the drop-in of said third module; and connection elements that optically connect the drop-out port of said third module to the add-in port of said fourth module, and the drop-out port of said fourth module is optically connected to the add-in of said third module." There is no structure or circuit diagram provided to teach a person of ordinary skill in the art where or how the connection element provides such connection between the ports. Therefore, the specification fails to provide enabling disclosure for claim 28.

Claim 33 recites, "connection elements that optically connect the add-out port of said first module to the add-in port of said second module, and the drop-out port of said second module is optically connected to the drop-in port of said first module" There is no structure or circuit diagram provided to teach a person of ordinary skill in the art where or how the connection element provides such connection between the ports. Therefore, the specification fails to provide enabling disclosure for claim 32.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 34-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 34 recites, "each of said first and second modules are...removed from the corresponding second end of said first and second modules." It is unclear what is meant by the claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-8, 14, 23, 25, 30 and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Medin et al (US Patent No. 6,542,660).

Regarding claim 1, Medin et al disclose optical communication system, as shown in Fig. 3, comprising:

a series connection of elements E_i , $i=1,2, \dots N$, (OADM coupled to path 200 are serially connected) and where N is greater than 1, forming a first optical path, where each of said elements E_i injects an optical signal of band Σ_i (add channels), and where Σ_i is disjoint from Σ_j for all $i \neq j$ (see col. 7, lines 12-35); and,

a series connection of elements F_i , $i=1,2, \dots N$, (OADM coupled to path 210 are serially connected) forming a second optical path, where each of said elements F_i extracts an optical signal of band Σ_i (drop channels).

a plurality of transmitters T_i , $i=1,2, \dots N$ (220T1 and 220T2), coupled to said elements E_i on a one to one basis; and

a plurality of a receivers R_i , $i=1,2, \dots N$ (220R1 and 220R2), coupled to said elements F_i on a one to one basis.

Regarding claim 2, as shown in Fig. 3, Medin et al show said first optical path and said second optical path are physically separate paths.

Regarding claim 3, Medin et al disclose that each of said bands, Σ_i , is a narrow band that carries a single channel of communication (see col. 9, lines 52-59).

Regarding claim 4, Medin et al disclose that each of said bands, Σ_i (Σ_{13} or Σ_{15}) is substantially a single wavelength (see col. 9, lines 52-59).

Regarding claim 5, Medin et al disclose that at least one of said elements E_k , that injects band Σ_k , carries a plurality of independent channels of communication (see col. 9, lines 52-59).

Regarding claim 6, Medin et al disclose that each of said bands, Σ_i , comprises a plurality of narrow bands centered about wavelengths Σ_j , $j=1, 2, \dots M$, where M is an integer greater than 1, and each of said narrow bands constitutes an information channel (see col. 9, lines 52-59).

Regarding claim 7, Medin et al disclose that the narrow bands are composed of essentially a single wavelength, where wavelength Σ_j is different from Σ_k for all $j \neq k$ (see col. 9, lines 52-59).

Regarding claim 8, Medin et al disclose that transmitters, T_k , includes an optical multiplexer that combines optical signals, each of said signals constituting one channel of communication, to form an optical signal of band Σ_k (in col. 9, lines 45-63, Medin et al disclose the use of wavelength division multiplexing (WDM) comprising multiple channels multiplexed together).

Regarding claim 14, as shown in Fig. 3, Medin et al show each element E_i has an input port and an output port, each element E_i , has its output port connected to input port of element E_{i+1} , the input port of element E_i , forms an add-in node input port, and the input port of element E_N forms an add-in node output port, and each element F_i has an input port and an output port, each element F_i has its output port connected to input port of element F_{i-1} , the input port of element F_N forms a drop-out node input port, and the input port of element F_1 , forms a drop-out node output port (each element E and element F is connected to other elements E and elements F ; the signal received by the element coupled to the optical ring has an input port and output port).

Regarding claim 23, as shown in Fig. 3, Medin et al disclose optical communication comprising:

a first node in a first location (OADMs located on the top of the ring can be considered as a first node),

a second node in a second location that is remote from said first location (OADMs located on the bottom of the ring can be considered as a second node); and

a bi-directional optical connection between said first node and said second node (fiber pair (200 and 210), which connects the first and second nodes, can be considered as a bidirectional optical connection).

Regarding claim 30, as shown in Fig. 3, Medin et al show plurality of nodes interconnected to form a ring.

Regarding claim 25, Medin et al disclose optical communication system, as shown in Fig. 3, comprising:

a first series connection of N elements (OADM coupled to path 200 are serially connected), forming a first optical path, where each of the elements in said first series injects an optical signal of a preselected band of wavelengths (add channel), and where bands of wavelengths of the different elements in said first series are disjoint from each other (see col. 7, lines 12-35 and col. 9, lines 52-59); and,

a second series connection of N elements (OADM coupled to path 200 are serially connected), forming a second optical path that is disjoint from said first optical path, where each of the elements in said second series extracts an optical signal of a preselected band of wavelengths (drop channels), and where bands of wavelengths of

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the different elements in said second series are the same as the bands of wavelengths of the different elements in said first series(see col. 7, lines 12-35 and col. 9, lines 52-59).

a plurality of transmitter elements, with each one of said transmitter elements being coupled to a different one of said N elements in said first series connection of N elements (220T1 and 220T2); and

a plurality of a receivers elements, with each one of said receiver elements being coupled to a different one of said N elements in said second series connection of N elements (220R1 and 220R2).

Regarding claim 31, Medin et al disclose optical communication system comprising of plurality of nodes, as shown in Fig. 3 comprising:

a first optical path (200) composed of a series connection of elements E_i , $i=1,2, \dots N$ (OADM), where N is greater than 1, where each of said elements E_i injects an optical signal of band Σ_i (add channel), and where Σ_i is disjoint from Σ_j for all $i \neq j$, followed by a series connection of elements F_j , $i=1,2, \dots N$ (OADM), where each of said elements F_i extracts an optical signal of band Σ_j (drop channel) and where at least one Σ_i is equal to Σ_j ; and

a second optical path (210), disjoint from said first optical path, composed of a series connection of elements F_i , $i=1,2, \dots N$, followed by series connection of elements E_j , $i=1,2, \dots M$ (the OADM functions to add and/or drop optical channel; therefore one location may be selected to add optical channels and at another to drop optical channel);

a plurality of optical transmitters coupled to said elements on a one to one basis; and a plurality of optical receivers coupled to said elements on a one to one basis (as shown in Fig. 3, there are plurality of transmitters and receivers coupled to the elements).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 9, 10 and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Medin et al (US Patent No. 6,542,660).

Regarding claim 9, as discussed above, Medin et al disclose multiplexer and differ from the claimed invention in that Hutchison et al do not specifically disclose that the multiplexer is a multi-level multiplexer. However, it is well known that plurality of multiplexer can be couple together to form cascaded multiplexer, therefore, it would have been obvious to form a multi-level multiplexer by cascading the multiplexer in order to combine optical signal of different data rates.

Regarding claim 10, as shown in Fig. 3, Medin et al show that elements E_i and element F_i and transmitter/receiver are closely placed together and differ from the claimed invention in that Medin et al do not specifically disclose collection of elements that includes element E_i and element F_i , the transmitter T_i and receiver R_i are housed in

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the single equipment module. However, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to house the elements and transmitter and receiver in the same equipment module. One of ordinary skill in the art would have been motivated to do this in order to protect all elements using a single housing.

Regarding claim 32, Medin et al disclose optical communication system comprising of plurality of nodes, shown in Fig. 3, comprising:

a first module (OADM) having an add-in port that leads to a set of elements that add an optical signal of a first wavelength, an add-out port that outputs an optical signal from said set of elements that add an optical signal, a drop-in port (it is well known that the OADM have input and output ports to receive and transmit wavelength channel) that leads to a set of elements that extract an optical signal of said first wavelength, and a drop-out port that outputs an optical signal from said set of elements that extract an optical signal (the set of elements are shown as (A) and (D) which add or inject and drop or extract the optical signal).

Medin et al does not specifically disclose that the add-out port is physically disposed directly adjacent said drop-in port such that no other port is positioned between said add-out port and said drop-in port and that the add-in port is physically disposed directly adjacent said drop-out port such that no other port is positioned between said add-in port and said drop-out port. However, it would have been obvious to an artisan of ordinary skill in the art to arrange the connection port in a particular design since such arrangement does not alter operation of the device.

Regarding claim 33 (as far as understood), in Fig. 3, Medin et al show a second module

a second module having an add-in port (another OADM) that leads to a set of elements that add an optical signal of a second wavelength, an add-out port that outputs an optical signal from said set of elements that add an optical signal, a drop-in port that leads to a set of elements that extract an optical signal of said second wavelength, and a drop-out port that outputs an optical signal from said set of elements that extract an optical signal (it is well known that the OADM have input and output ports to receive and transmit wavelength channel; the set of elements are shown as (A) and (D) which add or inject and drop or extract the optical signal).

Medin et al does not specifically disclose that the add-out port is physically disposed directly adjacent said drop-in port such that no other port is positioned between said add-out port and said drop-in port. However, it would have been obvious to an artisan of ordinary skill in the art to arrange the connection port in a particular design since such arrangement does not alter operation of the device.

Regarding claim 34 (as far as understood), as shown in Fig. 3, Medin et al show plurality of nodes interconnected by ring transmission lines comprising:

each of said first and second modules include first and second ends, said add-in port, said add-out port, said drop-in port and said drop-out port of each of said first and second modules are physically disposed adjacent the corresponding first end of said first and second modules.

Regarding claim 35, shown in Fig. 3, Medin et al show add-out ports of said first and second modules are physically separated from the corresponding drop-in ports of said first and second modules; and, said add-in ports of said first and second modules are physically separated from the corresponding drop-out ports of said first and second modules.

Medin et al differs from the claimed invention in that Medin et al do not specifically disclose that the ports are physically spaced less than two inches. However, lacking any criticality of such spacing, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide spacing of the ports less than two inches. One of ordinary skill in the art would have been motivated to provide such spacing in order to provide compact design.

Allowable Subject Matter

10. Claim 29 is allowed.
11. Claims 11-13, 15-22 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

12. Applicant's arguments with respect to claims 1, 15, 17, 20, 25, 29 and 31 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is (571) 272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DS
June 10, 2006

Dalzid Singh